IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application. No.	:	10/763,691	Confirmation No. 7684
Applicant	:	Fred P. Reinhard	
Filed	:	January 22, 2004	
TC/A.U.	:	1795	
Examiner	:	Arun S. Phasge	
Docket No.	:	5413P004	
Customer No.	:	8791	

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

REPLY BRIEF

Sir:

This Reply Brief is in response to the Examiner's Answers of March 16, 2010. Applicant submits the following Reply Brief pursuant to 37 C.F.R. §41.41 for consideration by the Board of Patent Appeals and Interferences. Please charge any additional fees or credit any overpayment to our deposit Account No. 02-2666. A duplicate copy of the Fee Transmittal is enclosed for this purpose.

REMARKS/ARGUMENTS

The following are Applicant's reply to the Examiner's Answer dated March 16, 2010 to the Appeal Brief.

For brevity and clarity, Appellant will respond to some arguments in the Examiner's Answer and not all of them because these arguments have already been presented in the Appeal Brief.

Appellant notes that the Examiner presents arguments in his Examiner's Answer which were never elaborated throughout the prosecution of the present application. During the prosecution of the present application, Appellant repeatedly requested that the Examiner specifically point out *in the specification* where Byszewski allegedly teaches each and every limitation within ALL of the pending claims in order for the Appellant to have "the opportunity to provide evidence of a patentability and otherwise reply completely at the earliest opportunity" MPEP § 706. Appellant notes that throughout the prosecution of the present application, the Examiner failed to comply with examination guidelines outlined in MPEP §706 and 37 C.F.R. §1.104(c)(2).

Additionally, Appellant notes that the Examiner's new rejections contradict the rejections previously presented in the Office Actions. For instance, in the Office Action dated 01/11/2008, the Examiner alleged the following the correspondences:

Byszewski	Present Application (claim 1)
Electrodialytic water splitter 428	EMS subsystem

In the Examiner's Answer, the Examiner now alleges the following correspondences (Examiner's Answer, page 4):

Byszewski	Present Application (claim 1)
Figure 3 – Base purification unit 409 (See col. 7, lines 30-33)	Anode compartment of the EMS subsystem
Figure 4 – Acid purification unit 458 (See col. 6, lines 31-33, col. 8, lines 35-38)	Cathode compartment of the EMS subsystem

Exhausted anion exchange column 401	Impurity separation subsystem

Nonetheless, Appellant requests that the appeal be maintained because the Examiner's newly presented rejections fail to establish a *prima facie* case of obviousness for the following reasons.

1. THE EXHAUSTED REGENERANT 402 CANNOT CORRESPOND TO THE REJECT SOLUTION AS DELINEATED IN INDEPENDENT CLAIM 1

In the Examiner's Answer, the Examiner now alleges that exhausted anion exchange column 401 corresponds to the "impurity separation subsystem" and base purification unit 409 corresponds to "the EMS subsystem" (Examiner's Answer, page 4). Appellant respectfully disagrees and submits that Byszewski discloses fresh anion exchange regenerant being introduced into the exhausted anion exchange column 401. The exhausted anion exchange regenerant is removed via line 402. The exhausted anion exchange regenerant 402 is filtered via a filtration unit 403 to remove suspended solids. The filtered exhausted anion exchange regenerant 408 is fed into the base purification unit 409 (Byszewski, col. 7, lines 22-25).

In contrast, claim 1 recites "an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity and an output solution,... the EMS subsystem to receive the reject solution from the impurity separation subsystem."

(i) "an impurity separation subsystem... to produce a reject solution... and an output solution"

First, Appellant submits that the exhausted anion exchange column 401 merely produces exhausted anion exchange regenerant 402. Accordingly, the exhausted anion exchange column 401 cannot correspond to "the impurity separation subsystem... to produce [i] a reject solution... and [ii] an output solution" as delineated in claim 1.

(ii) "an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity...the EMS subsystem to receive the reject solution from the impurity separation subsystem."

Second, in light of the recitations of claim 1, since the filtered exhausted anion exchange regenerant 408 is fed into the base purification unit 409, allegedly "the EMS subsystem," the

Examiner is necessarily alleging that the filtered exhausted anion exchange regenerant 408 corresponds to "a reject solution with an elevated level of the selected impurity." Further, the Examiner necessary alleges that the fresh anion exchange regenerant introduced into the exhausted anion exchange column 401 corresponds to "the feed water" from which the selected impurity is removed.

Appellant respectfully disagrees because Byszewski merely discloses fresh anion exchange regenerant being introduced into the exhausted anion exchange column 401 which outputs the exhausted anion exchange regenerant 402 which is filtered of suspended solids to produce the filtered exhausted anion exchange regenerant 408. There is no selected impurity which is (1) removed from in the fresh anion exchange regenerant (allegedly, "feed water") and (2) included at an elevated level in the filtered exhausted anion exchange regenerant 408 (allegedly, "reject solution"). Instead, the differences between fresh anion exchange regenerant and filtered exhausted anion exchange regenerant 408 are the following:

(a) The filtered exhausted anion exchange regenerant 408 is filtered of suspended solids by filtration unit 403.

We note that since the suspended solids are filtered by the filtration unit 403 and not the exhausted anion exchange column 401 (allegedly, the "impurity separation subsystem"), the suspended solids cannot be the "selected impurities" removed from the fresh anion exchange regenerant.

Further, even assuming that the suspended solids were the selected impurities, the filtered exhausted anion exchange contains less suspended solids than the fresh anion exchange regenerant such that the filtered exhausted anion exchange regenerant 408 cannot be the "reject solution with an *elevated level* of the selected impurity." *Emphasis added.*

(b) The filtered exhausted anion exchange regenerant 408 is anion exhausted.

Similarly, even assuming that the anion being exhausted is the selected impurity, filtered exhausted anion exchange regenerant 408 cannot be the "reject solution with an elevated level of the selected impurity."

Moreover, in the Examiner's Answer, the Examiner alleges:

> "the "brine solution" [or "reject solution"] in Byszewski is composed of NaCl, Na_2SO_4, NaOH and Na_2SiO_3, (example 1 in col. 9, lines 55-57) which when fed to an EMS shown in Figure 3 results in the transfer of the selected

impurity, such as a monovalent ion (in Figure 3, the selected impurity or monovalent ion is sodium ions)" (Examiner's Answer, page 9)

Appellant respectfully submits that even assuming that a monovalent ion is "[transferred]… to a conductive solution" by base purification unit 409, there is no teaching in Byszewski of the sodium ions (allegedly, the "selected impurity") first being (1) removed from in the fresh anion exchange regenerant (allegedly, "feed water") and (2) included at an elevated level in the filtered exhausted anion exchange regenerant 408 (allegedly, "reject solution").

Accordingly, filtered exhausted anion exchange regenerant 408 cannot correspond to the reject solution, as delineated in claim 1. Please note that similar arguments can be made regarding the Examiner's allegation that Byszewski discloses "the brine solution" in claims 13 and 17.

2. FIGURES 3 AND 4 CANNOT CORRESPOND TO THE ANODE AND CATHODE COMPARTMENTS INCLUDED IN THE EMS SUBSYSTEM AS DELINEATED IN CLAIMS 1, 7, AND 8

In the Examiner's Answer, the Examiner now alleges that Figure 3 (Base purification unit 409) and Figure 4 (Acid purification unit 458) correspond to the anode and cathode compartments of the EMS subsystem, respectively (Examiner's Answer, page 4). Moreover, as discussed above, the Examiner alleges that the exhausted anion exchange column 401 corresponds to the "impurity separation subsystem" (Examiner's Answer, page 4).

Appellant respectfully disagrees and submits that *inter alia* claim 1 recites: "an electrolytic membrane separation (EMS) subsystem in fluid communications with the impurity separation subsystem, the EMS subsystem to receive the reject solution from the impurity separation subsystem…"

As shown in Figure 5, the acid purification unit 458 illustrated in Figure 4 is not "in fluid communication" with exhausted anion exchange column 401 (allegedly, "the EMS subsystem"). Accordingly, acid purification unit 458 cannot be the catholyte compartment included in the EMS subsystem, as delineated in claims 1 and 7-8.

3. BASE DEPLETED REGENERANT 422 CANNOT CORRESPOND TO THE REJECT SOLUTION AS DELINEATED IN INDEPENDENT CLAIM 1

(i) Pretreatments – removing impurities

In response the Examiner's allegation that "Appellant argues that since the base depleted regenerant 422 is pretreated to remove impurities […] it cannot correspond to a reject solution

with an elevated level of impurity. It is unclear what structure this functional limitation is meant to encompass" (Examiner's Answer, page 8), Appellant submits the following reiterated arguments.

In the Office Action dated 01/11/2008, the Examiner alleged that the electrodialytic water splitter 428 in Byszewski corresponds to "EMS subsystem", as recited in claim 1. Accordingly, as discussed in the Appeal Brief, since the electrodialytic water splitter 428 receives base depleted regenerant 422 (Byszewski, col. 7, lines 20-62; Figure 5), Appellant submits that the Examiner must therefore allege that base depleted regenerant 422 corresponds to the reject solution.

Further, as argued in the Appeal Brief, the ion exchanger that produces the base depleted regenerant 422 does not constitute the impurity separation subsystem as claimed because the ion exchanger fails to produce a reject solution with an elevated level of the selected impurity. In other words, Appellant is arguing that there is no teaching of base depleted regenerant 422 having an elevated level of the selected impurity such that base depleted regenerant 422 cannot correspond to the reject solution, as recited in claim 1.

Additionally, the Examiner states:

> ...the Byszewski patent teaches that, the pretreatment, such as micro or ultrafiltration, of the exhausted regenerant may be required to remove multivalent metals and dissolved organics, but that the concentration of multivalent metals is generally low in the spent regenerant implying that no such pretreatment is a necessity (col. 5, lines 62-69). Indeed it appears that only when anion membranes are used would this removal be required (see col. 6, lines 47-53). The embodiment disclosed in Figure 3 [item 409] of the Byszewski patent does not use anion membranes and accordingly would not require the removal of multivalent metals" (Examiner's Answer, page 8).

Appellant submits that the Examiner misconstrues the teachings of Byszewski as well as the language as recited in claim 1. Byszewski merely delineates that the exhausted anion exchange regenerant 402 may include low concentrations of multivalent metals such that the use of the base purification unit 409 is straight forward (Byszewski, col. 5, line 62 to col. 6, line 3). Appellant submits that the Examiner's conclusion that the base depleted regenerant 422 is a reject solution with an elevated level of impurities because the base depleted regenerant 422 is not necessarily pretreated to remove multivalent metals from its content is faulty.

Appellant submits that if the multivalent metals concentration in the exhausted anion exchange regenerant 402 is low and not pretreated to be removed, than the concentration remains the same in the base depleted regenerant 422. Accordingly, there is still no teaching of "an impurity separation subsystem to remove a selected impurity from a feed water and to produce a reject solution with an elevated level of the selected impurity."

(ii) cations cannot correspond to impurities

In the Examiner's Answer, the Examiner states that "Appellants further argue, "even assuming that the anions and cations correspond to "selected impurities", as recited in claim 1, the ion exchanger simply provides the base depleted regenerant 422 which does not include an elevated level of the selected impurity (i.e., cation)." The Examiner further states "there is no claim basis for the impurity being cation." (Examiner's Answer, page 9).

Appellant respectfully submits that due the Examiner's repeated failures to provide adequate rejections during prosecution of the present applications as discussed above, Appellant was forced to guess how the Examiner could conclude that Byszewski taught the elements of the present claims. In other words, based on the few elements in Byszewski that the Examiner indicated to correspond to given elements in the claims, Appellant provided arguments to show that the Examiner has not established a *prima facie* case of obviousness.

Contrary to that misconstrued by the Examiner, Appellant is not claiming that the impurity is a cation but merely makes the argument that the Examiner cannot conclude that impurities are cations and even if the Examiner were to allege that the cations correspond to the selected impurity, the base depleted regenerant 422 cannot correspond to the reject solution because it does not include an elevated level of the selected impurity (i.e., cation).

Conclusion

Appellant respectfully requests that the Board enter a decision overturning the Examiner's rejection of all pending claims, and holding that the claims satisfy the requirements of 35 U.S.C. §101, 35 U.S.C. §112, and 35 U.S.C. §103(a).

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: May 17, 2010

By /William W. Schaal/
William W. Schaal
Reg. No. 39,018
Tel.: (714) 557-3800 (Pacific Coast)

1279 Oakmead Parkway
Sunnyvale, CA 94085-4040
(714) 557-3800

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application. No.	:	1-/763,691	Confirmation No. 7684
Applicant	:	Fred P. Reinhard	
Filed	:	January 22, 2004	
TC/A.U.	:	1795	
Examiner	:	Arun S. Phasge	
Docket No.	:	5413P004	
Customer No.	:	8791	

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Authorization for Extension of Time, All Replies

Authorization is given to treat any concurrent or future reply, requiring a petition for an extension of time under 37 CFR 1.136(a) for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. If any other petition is necessary for consideration of this paper, it is hereby so petitioned. Please charge any shortage in fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 02-2666 and please credit any excess fees to such deposit account.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: May 17, 2010

By /William W. Schaal/
William W. Schaal
Reg. No. 39,018
Tel.: (714) 557-3800 (Pacific Coast)